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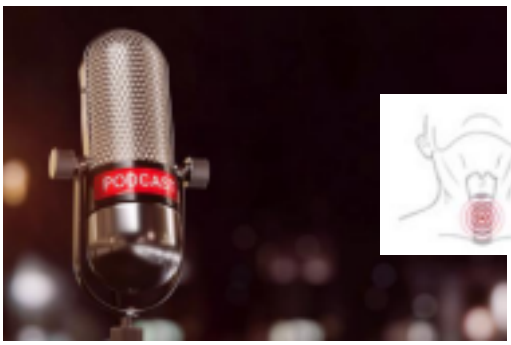

National Tracheostomy Safety Project

This month's top papers: April 2024

Welcome to the latest blog in the literature podcast from the NTSP. We try to bring you a quick roundup of what is hot in the world of tracheostomy and laryngectomy publications by scouring internationally recognised journals and media and bringing you the highlights.

The papers we will discuss this month are detailed below, along with an automated transcript of the podcast. Please note that the transcript is generated by AI and so may not be totally accurate.

You can find the links to the podcast on www.tracheostomy.org.uk and by searching for NTSP on your favourite podcast platform. Some of the podcasts are also uploaded to YouTube if you prefer to get your news that way. Check out the NTSP YouTube channel at https://www.youtube.com/c/NationalTracheostomySafetyProject. Please follow us and/or subscribe to keep up to date! https://x.com/NTSP_UK

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This month's top papers

- Tracheostomy decannulation readiness: A cross sectional study comparing standardised evaluation for tacheostomy decannulation to flexible endoscopic evaluation of swallowing examination.
- Sim-Based Home Tracheostomy Care: A Mixed Methods Study on Outcomes and Parental Preparedness.
- Clinical outcomes according to the timing of the first tracheostomy tube change.
- The Effect of Delay Following the Clinical Decision to Perform Tracheostomy in the Critical Care Setting.
- A 5-Year Review of a Tracheostomy Quality Improvement Initiative: Reducing Adverse Event Frequency and Severity.
- Communication in critical care tracheostomy patients dependent upon cuff inflation: A scoping review.
- Tracheal Stenosis in Open Versus Percutaneous Tracheostomy.

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Tracheostomy decannulation readiness: A cross sectional study comparing standardised evaluation for tacheostomy decannulation to flexible endoscopic evaluation of swallowing examination.

Lay Summary:

This study compared a new, standardized method for checking if patients with severe brain or nerve conditions are ready to have their breathing tube (tracheostomy) removed, called the SESETD method, with the current gold-standard camera test, FEES. Safely removing the tracheostomy tube, a process called decannulation, is a crucial milestone in recovery, but it is often challenging and delayed if a patient suffers from difficulties swallowing (dysphagia) or cannot protect their airway from food and liquid entering the lungs. The standard FEES test is highly effective but requires specialized equipment and is dependent on the operator's skill, which is why a simpler, more standardized approach is needed.

The SESETD method is a systematic way to use the camera test to specifically check three key readiness parameters: how well the patient manages their saliva (standing secretion), whether they can swallow spontaneously, and the sensitivity of their vocal cords (laryngeal sensitivity). The study looked at 36 patients with neurological problems and found a strong match between the results of the two objective assessment methods. The statistical agreement was significant, confirming that the standardized SESETD reliably measures the same readiness factors as the comprehensive FEES test. Of the patients examined, 22 successfully moved forward with having their tracheostomy tube removed. The conclusion is that the SESETD method provides a dependable and efficient tool for doctors to use when making critical decisions about decannulation. This standardized approach can help streamline the recovery process for neurological patients and ensure the final removal of the breathing tube is done safely.

Summary for Healthcare Professionals:

This cross-sectional study investigated the conformity between the Standardized Endoscopic Swallowing Evaluation for Tracheostomy Decannulation (SESETD) and Flexible Endoscopic Evaluation of Swallowing (FEES) in assessing decannulation readiness in 36 neurologic patients. The rationale was to validate SESETD—an objective, stepwise protocol evaluating secretion management, spontaneous swallowing, and laryngeal sensitivity—as a less operator-dependent alternative to FEES for identifying readiness in this high-risk population. Dysphagia and impaired airway protection are recognized as the primary causes for delayed decannulation in this cohort.

Statistical analysis confirmed a significant agreement between the two objective assessment modalities (Kappa value =0.47,$p<0.0001$). Decannulation was successfully achieved in 22 out of 36 subjects examined. The study concludes that there is conformity between FEES and SESETD in evaluating the three key physiological parameters of decannulation readiness: standing secretion, spontaneous swallowing, and laryngeal sensitivity. This finding supports the utility of SESETD as a safe, efficient, and objective bedside tool to guide decannulation decisions. Integrating the SESETD protocol into multidisciplinary decannulation pathways offers a standardized measure that can expedite the airway liberation process and reduce the unnecessary prolongation of cannulation due to subjective clinical assessments in critically ill neurologic patients.

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Sim-Based Home Tracheostomy Care: A Mixed Methods Study on Outcomes and Parental Preparedness.

Lay Summary:

This study investigated the effectiveness of a specialized training program using medical simulation to prepare parents and caregivers for taking care of a child with a new tracheostomy at home. Since tracheostomy care is complex and requires constant vigilance against life-threatening emergencies, ensuring caregiver preparedness is a major priority upon hospital discharge. The research used a mixed-methods approach, combining in-depth interviews with a retrospective study of patient outcomes. The interviews with 18 caregivers revealed highly positive feedback, confirming that the Simulation-Based Discharge Education Program (SDP) successfully fostered feelings of comfort and preparedness, and was valuable for learning and applying skills at home. Caregivers highlighted the benefits of active learning and acquiring practical knowledge through the simulated environment. However, when comparing the safety outcomes for the 27 children whose parents received the simulation training to 27 similar children whose parents did not, there was no statistically significant difference in the primary safety outcome: emergency department visits for tracheostomy-related issues within the first year. Despite this finding, the study concludes that the simulation training is feasible, safe, and highly successful at enhancing parental confidence and practical knowledge. The authors strongly recommend that this increased preparedness is crucial for improving quality of life and should be implemented for all new tracheostomy families, while advocating for larger, prospective studies to definitively measure the long-term impact on hospital utilization and adverse events.

Summary for Healthcare Professionals:

This mixed-methods study evaluated the outcomes of a Simulation-Based Discharge Education Program (SDP) for caregivers of children with new tracheostomies. The methodology combined a qualitative analysis of 18 caregiver interviews with a quantitative retrospective case-control study comparing 27 children whose caregivers completed SDP to 27 matched controls. The primary quantitative outcome measured was emergency department (ED) visits for tracheostomy-related issues within one year of discharge. The qualitative analysis demonstrated strong efficacy in the affective and applied domains of learning. Caregivers reported high satisfaction, citing five positive themes: knowledge acquisition, active learning, comfort/preparedness, home application of skills, and overall assessment. This feedback confirms the program's success in mitigating caregiver anxiety and improving self-efficacy. However, the quantitative analysis found no statistically significant difference in the primary outcome (ED visits for tracheostomy-related issues) between the SDP group and the matched control group. Despite the lack of an immediate, measurable reduction in hospital utilization in this small cohort, the study concludes that SDP is a safe and feasible intervention. The clinical implication is that simulation training is highly effective at enhancing caregiver preparedness and is warranted as a standard component of discharge planning. The authors recommend a larger, adequately powered, prospective study to definitively measure the effect of improved caregiver competency on adverse event rates and healthcare resource utilization.

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Clinical outcomes according to the timing of the first tracheostomy tube change.

Lay Summary:

This study analyzed a massive dataset of over 3,900 adult patients to determine the safest and most effective time to perform the first change of a tracheostomy tube. The first tube replacement is considered a high-risk procedure because if the surgical opening (stoma) is not adequately healed, a misplaced tube can lead to severe or fatal complications.

The core finding of this large-scale analysis revealed a "U-shaped" risk pattern for patient survival, meaning that performing the tube change too early or too late was associated with an increased risk of death. The optimal window, associated with the lowest all-cause mortality rate (42.1%), was identified as being between 7 and 9 days after the initial tracheostomy surgery.

The risks of early change were particularly clear: changing the tube within the first six days was independently linked to a higher risk of death, likely because the stoma had not matured. Conversely, delaying the change beyond 10 days, while not statistically linked to increased mortality after adjustment, was associated with significantly longer stays in both the hospital and the Intensive Care Unit (ICU). This valuable data suggests that timing is critical and that adhering to the 7-to-9-day window can improve patient safety and recovery efficiency.

Summary for Healthcare Professionals:

This single-institutional retrospective cohort study investigated the association between the timing of the first tracheostomy tube change and all-cause mortality in a large cohort of 3,957 adult patients. The objective was to determine the optimal timing for this high-risk procedure, which can lead to life-threatening complications if performed before stoma maturation.

The primary outcome analysis demonstrated that the all-cause mortality rate was statistically significantly lowest in the group undergoing the first tube change between 7 and 9 days (42.1%, P=0.001). A multivariable Cox regression analysis further revealed that an early first tube change (≤6 days) was independently associated with an increased risk of all-cause mortality (Adjusted HR 1.16, P=0.007). This suggests that premature replacement is performed before the stoma has adequately stabilized.

Furthermore, the study quantified the clinical inefficiency of delay. Delayed replacement (≥10 days) was strongly associated with significantly longer hospital and ICU lengths of stay and an increase in post-procedural pulmonary complications compared to the 7-to-9-day group. The authors conclude that the optimal timing for the first tracheostomy tube change in adult critically ill patients is between 7 and 9 days post-tracheostomy. This evidence provides a robust clinical window to guide standardized protocols, although future prospective trials are necessary to fully establish causality and confirm long-term outcomes.

NTSP Podcast Series

The Effect of Delay Following the Clinical Decision to Perform Tracheostomy in the Critical Care Setting.

Lay Summary:

This study looked at what happens when a necessary medical procedure—a tracheostomy (breathing tube in the neck)—is delayed due to legal requirements. In the jurisdiction where this study took place, an estimated one-week delay is required to obtain a court-appointed guardian to provide consent for elective surgeries like tracheostomy when a patient cannot consent for themselves.

The researchers tracked patients for whom a team had clinically decided to perform a tracheostomy and observed their medical course during this mandatory waiting period. The findings were striking: the one-week delay resulted in a 50% reduction in the number of tracheostomies actually performed. This happened because, during that week, patients either recovered sufficiently and were extubated (breathing tube removed), or they experienced clinical deterioration, leading to death or a shift to palliative care.

The fact that so many procedures were averted due to patient recovery suggests that the initial decision to pursue the tracheostomy might have been premature. The study concludes that this built-in delay, while due to legal requirements, serves as an unexpected and valuable natural experiment. It strongly suggests that doctors could improve their ability to predict who truly needs a tracheostomy, potentially saving many patients from an unnecessary procedure and its inherent risks.

Summary for Healthcare Professionals:

This retrospective cohort study investigated the clinical effect of a mandatory, court-mandated delay in implementing an already-decided elective tracheostomy (TT) in critically ill patients. The unique legal requirement for a court-appointed guardian for patients unable to consent created an involuntary delay of approximately one week between the clinical decision and the performance of the TT.

The analysis, which retrospectively identified patients based on the application for guardianship, found that the delay was associated with a 50% reduction in the number of TTs actually performed. Of the subjects who underwent a guardianship request, only 50% ultimately received the tracheostomy. The remaining patients were either extubated due to recovery (33%) or experienced clinical deterioration/death, or transitioned to palliative care (17%) before the procedure could be performed. The median time from request to extubation was 5.0 days, significantly shorter than the time to tracheostomy.

This phenomenon suggests a significant challenge in accurately predicting the necessity of TT and highlights the role of clinical equipoise in the initial decision-making process. The authors conclude that this legal delay, acting as a natural waiting period, provides empirical evidence that clinical decision-making for optimal TT timing could be improved, potentially saving a substantial number of patients from an unnecessary invasive procedure. This finding advocates for further research to refine prognostication tools to better identify patients who will recover and extubate successfully.

NTSP Podcast Series

A 5-Year Review of a Tracheostomy Quality Improvement Initiative: Reducing Adverse Event Frequency and Severity.

Lay Summary:

This study reports on a successful, five-year hospital project aimed at drastically improving the safety of care for patients with a tracheostomy (a breathing tube in the neck). Although the tracheostomy procedure is essential, a significant number of patients—estimated at 20% to 30%—experience at least one related complication. This can lead to severe harm, especially when the patient is moved from the intensive care unit to a general ward.

The specialized Tracheostomy Quality Improvement (QI) initiative focused on three main areas: improving education and training for all staff, strengthening clinical oversight and decision-making, and enhancing data collection. The results of this long-term effort showed a massive improvement in patient safety. Over the five-year period, the hospital achieved a sustained reduction in both the frequency and severity of adverse events. This was a major success, with less than 1 patient out of every 100 experiencing a complication that was classified as moderate or severe. The study concludes that continuous, team-led projects focused on standardizing care are extremely effective at reducing patient harm in this high-risk setting.

Summary for Healthcare Professionals:

This quality improvement (QI) report details the successful outcomes of a 5-year Tracheostomy QI initiative implemented by a dedicated multidisciplinary team at a tertiary hospital. The project was initiated to address the high baseline incidence of tracheostomy-related adverse events, which affects an estimated 20% to 30% of patients. The initiative targeted three main pillars: Education and training, Clinical oversight and decision making, and improved data collection. Over the five-year period, the institution achieved a sustained reduction in both the frequency and severity of adverse events. The data demonstrated that less than 1 patient per 100 experienced a moderate or severe adverse event. This remarkable safety improvement reinforces the efficacy of standardized, evidence-based multidisciplinary care pathways. The study's conclusion advocates for continuous, team-led QI as the fundamental strategy for minimizing patient harm and enhancing outcomes in the complex and high-risk tracheostomy population.

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Communication in critical care tracheostomy patients dependent upon cuff inflation: A scoping review.

Lay Summary:

This review investigates the severe challenges of communication for critically ill patients in the Intensive Care Unit (ICU) who are awake but unable to speak due to their tracheostomy tube's inflated cuff. The findings confirm that losing one's voice is a deeply stressful experience, evoking negative emotions, primarily frustration. Many patients reported feeling invisible, not valued as a person, and powerless when they could not communicate basic needs or participate in care decisions. The study synthesizes evidence on Augmentative and Alternative Communication (AAC) systems used to bridge this gap. These strategies range from unaided methods like gestures, eye contact, and supportive touch to aided strategies, including writing boards, alphabet charts, and high-tech devices. No single communication method emerged as the perfect fix for everyone. High-tech systems hold promise for patients with physical limitations, but the simple, unaided strategies offered by nurses were equally appreciated by patients. Barriers often include the patient's own medical status and physical limitations. The review concludes that restoring meaningful communication is extremely important for a patient's psychological well-being and must be continuously evaluated and supported by a multidisciplinary team.

Summary for Healthcare Professionals:

This scoping review, utilizing the Joanna Briggs Institute framework, synthesized evidence concerning communication strategies in critically ill tracheostomy patients who remain dependent on cuff inflation for ventilatory support. The analysis included 23 studies (qualitative, quantitative, and mixed-methods) and aimed to characterize the psychological impact of voicelessness, delineate utilized Augmentative and Alternative Communication (AAC) systems, and identify associated facilitators and barriers. The synthesis confirmed that voicelessness elicits substantial psychological distress, with frustration being the predominant negative emotion. This communication barrier often leads to patients feeling devalued and isolated. AAC systems encompassed a spectrum from unaided modalities (e.g., eye contact, touch) to aided methods (low- and high-tech devices). High-tech strategies show promise for patients with severe physical limitations, but the efficacy of all systems is constrained by patient-specific challenges, which were identified as the most frequent barriers. The conclusion emphasizes that facilitating meaningful communication holds paramount psychological significance for this population. Given the inherent limitations of AAC systems and the absence of a universally applicable solution, the review strongly advocates for continuous, individualized evaluation and implementation, reinforced by a vigilant multidisciplinary team approach.

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Tracheal Stenosis in Open Versus Percutaneous Tracheostomy.

Lay Summary:

This study addressed a major concern in patient recovery: whether the type of surgery used to create a neck breathing tube, or tracheostomy, affects the long-term risk of developing severe scarring and narrowing of the windpipe, a complication called tracheal stenosis (TS). Researchers performed a retrospective analysis, looking back at the records of patients who received either an open surgical tracheostomy (OT) or a less invasive, bedside procedure called percutaneous tracheostomy (PT).

The main finding was a notable surprise: the choice of surgical technique does not significantly change the risk of developing this serious complication. The rate of tracheal stenosis was very similar in both groups (5.7% for OT and 4.2% for PT).

However, the study strongly emphasized the danger of TS itself, regardless of how the tracheostomy was done. Patients who developed tracheal stenosis had a significantly higher death rate within 90 days (33.3%) compared to those who did not (15.6%). Additionally, having TS was linked to longer hospital stays. The authors conclude that since neither technique offers protection against this complication, future efforts should focus on identifying what causes TS and how to prevent it, rather than comparing the two surgical approaches.

Summary for Healthcare Professionals:

This retrospective cohort study investigated whether the risk of developing Tracheal Stenosis (TS) is influenced by the surgical modality used for tracheostomy. The study compared outcomes between Open Tracheostomy (OT) and Percutaneous Tracheostomy (PT) procedures.

The primary finding was a strong lack of a statistically significant difference in the incidence of TS between the two groups. The observed TS rates were 5.7% in the OT cohort and 4.2% in the PT cohort. This outcome suggests that the technical distinction between the two procedures does not mitigate the risk of long-term stricture formation. However, the study strongly reaffirmed the adverse prognostic significance of TS. Patients who developed TS experienced a significantly higher 90-day mortality rate (33.3%) compared to those who did not (15.6%).

The authors conclude that the choice between OT and PT should not be predicated on the perceived risk of TS. Instead, future research should prioritize identifying underlying patient and non-procedural risk factors for TS and developing standardized preventative care bundles, as TS remains a major, high-morbidity complication in this population.

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Scientific abstracts and references

Med J Malaysia. 2024 Mar;79(2):119-123.

Tracheostomy decannulation readiness: A cross sectional study comparing standardised evaluation for tacheostomy decannulation to flexible endoscopic evaluation of swallowing examination.

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INTRODUCTION: Tracheostomy is a procedure commonly performed in neurocritical and mechanically ventilated patients in the intensive care unit. Dysphagia and impaired airway protection are the main causes for a delay in tracheostomy decannulation in patients with neurological disorders. Endoscopic evaluation is an objective examination of readiness for tracheostomy decannulation with flexible endoscopic evaluation of swallowing (FEES) as the most commonly used method, yet it requires special expertise and is heavily dependent on its operator in assessing the parameters. A relatively new method for assessing decannulation readiness in neurologic disorder, the Standardized Endoscopic Swallowing Evaluation for Tracheostomy Decannulation (SESETD) was introduced in 2013 by Warnecke, et al. This method includes stepwise evaluation of secretion management, spontaneous swallowing and laryngeal sensitivity. This study aims to find conformity between the SESETD and FEES in assessing readiness for tracheostomy decannulation in patients with neurologic disorders. MATERIALS AND METHODS: This study is a cross-sectional study conducted on 36 neurologic patients at Cipto Mangunkusumo General Hospital which was aimed to find the agreement between two modalities for tracheostomy decannulation readiness, FEES and SESETD based on parameters, standing secretion, spontaneous swallowing and laryngeal sensitivity. RESULT: A total of 36 subjects were examined and 22 of them underwent successful tracheostomy decannulation. The agreement between FEES and SESETD showed significant results with p-value <0.0001 and Kappa value = 0.47. CONCLUSION: There was conformity between FEES and SESETD in evaluating tracheostomy decannulation readiness based on three parameters: standing secretion, spontaneous swallowing and laryngeal sensitivity.

PMID: 38553913 [Indexed for MEDLINE]

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Hosp Pediatr. 2024 Apr 1;14(4):251-257. doi: 10.1542/hpeds.2023-007539.

Sim-Based Home Tracheostomy Care: A Mixed Methods Study on Outcomes and Parental Preparedness.

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OBJECTIVES: To assess effects of a Simulation-Based Discharge Education Program (SDP) on long-term caregiver-reported satisfaction and to compare clinical outcomes for children with new tracheostomies whose caregivers completed SDP versus controls. METHODS: The study employed a mixed methods approach: (1) a qualitative analysis of feedback from caregivers who previously completed SDP, and (2) a quantitative retrospective case-control study comparing outcomes between children with new tracheostomies whose caregivers completed SDP versus controls, matched on discharge disposition and age. The primary outcome was emergency department visits for tracheostomy-related issues within 1 year of discharge. RESULTS: Feedback from 18 interviews was coded into 5 themes: knowledge acquisition, active learning, comfort and preparedness, home application of skills, and overall assessment. Caregivers of 27 children (median age 26 months [interquartile range (IQR) 5.5 months-11 years]) underwent SDP training. Clinical outcomes of these children were compared with 27 matched children in the non-SDP group (median age 16 months [IQR 3.5 months-10 years]). There was no significant difference in ED visits for tracheostomy-related complications within 1 year of discharge between the SDP group and non-SDP group (2 [IQR 0-2] vs 1 [IQR 0-2], P = .2). CONCLUSIONS: Caregivers reported overwhelmingly positive experiences with SDP that persisted even 4 years after training. Caregiver participation in SDP did not yield a significant difference in ED visits within 1 year of discharge for tracheostomy-related complications compared with control counterparts. Future steps will identify more effective methods for comparing and analyzing clinical outcomes to further validate impacts of simulation-based programs.

DOI: 10.1542/hpeds.2023-007539 PMID: 38545677

NTSP Podcast Series

Heliyon. 2024 Mar 19;10(6):e28180. doi: 10.1016/j.heliyon.2024.e28180. eCollection 2024 Mar 30.

Clinical outcomes according to the timing of the first tracheostomy tube change.

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PURPOSE: The first tracheostomy tube replacement is a critical procedure that can cause various complications, but there are few studies on the optimal timing of tracheostomy tube replacement in adult patients. This study aimed to evaluate the appropriate timing to replace the first tracheostomy tube to improve outcomes in adult patients. MATERIALS AND METHODS: This study was a retrospective cohort study that included 3957 patients aged ≥18 years who underwent the first tracheostomy tube change from January 2010 to February 2021. The primary outcome was all-cause mortality after the first tracheostomy tube change. RESULTS: The all-cause mortality was statistically significantly lower in group changing the first tracheostomy tube between 7 and 9 days than in other groups (42.1%, P = 0.001). After adjustments in the multivariable analyses, early first tracheostomy tube change within 6 days was independently associated with increased all-cause mortality. The hospital stay, ICU stay, and post-procedural pulmonary complications seemed to increase as the replacement time was delayed. CONCLUSIONS: The timing of the first tracheostomy tube change between 7 and 9 days after tracheostomy was associated with improved clinical outcomes, including all-cause mortality. Further prospective investigations are needed to determine whether the optimal timing of the first tracheostomy tube change can reduce mortality.

DOI: 10.1016/j.heliyon.2024.e28180 PMCID: PMC10966685 PMID: 38545145

Conflict of interest statement: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Respir Care. 2024 Mar 27;69(4):463-469. doi: 10.4187/respcare.10916.

The Effect of Delay Following the Clinical Decision to Perform Tracheostomy in the Critical Care Setting.

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BACKGROUND: Tracheostomy in patients who are critically ill is generally performed due to prolonged mechanical ventilation and expected extubation failure. However, tracheostomy criteria and ideal timing are poorly defined, including equivocal data from randomized controlled trials and median intubation to tracheostomy times that range from 7-21 d. However, a consistent finding is that only ∼50% of late tracheostomy groups actually undergo tracheostomy, with non-performance due to recovery or clinical deterioration. Unlike in many jurisdictions, elective surgical procedures in our institution require a court-appointed guardian, which necessitates an approximately 1-week delay between the decision to perform tracheostomy and surgery. This offers a unique opportunity to observe patients with potential tracheostomy during a delay between the decision and the performance. METHODS: ICU patients who were ventilated were identified for inclusion retrospectively by an application for guardianship relating to tracheostomy, the intention-to-treat point. The main outcomes of tracheostomy, extubation, or death/palliative care after inclusion were noted. Demographics, outcomes, and event timing were compared for the 3 outcome groups. RESULTS: Tracheostomy-related guardianship requests were made for 388 subjects. Of these, 195 (50%) underwent tracheostomy, whereas 127 (33%) were extubated and 66 (17%) either died before tracheostomy (46 [12%]) or were transitioned to palliative care (20 [5%]). The median time (interquartile range) from guardianship request until a defining event was the following: 6.2 (4.0-11) d for tracheostomy, 5.0 (2.9-8.2) d for extubation ($P < .001$ as compared to tracheostomy group), and 6.5 (2.5-11) d for death/palliative care ($P = .55$ as compared to tracheostomy). Neurological admissions were more common in the tracheostomy group and less common in the palliative group. Other admission demographics and hospitalization characteristics were similar. Hospital mortality was higher for subjects undergoing tracheostomy (58/195 [30%]) versus extubation (24/127 [19%]) ($P = .03$). CONCLUSIONS: Delay in performing tracheostomy due to legal requirements was associated with a 50% decrease in the need for tracheostomy. This suggests that decision-making with regard to ideal tracheostomy timing could be improved, saving unnecessary procedures.

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Conflict of interest statement: The authors have disclosed no conflicts of interest.

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A 5-Year Review of a Tracheostomy Quality Improvement Initiative: Reducing Adverse Event Frequency and Severity.

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OBJECTIVE: The number of tracheostomies performed annually in resource-rich countries is estimated at 250,000. While an essential procedure, approximately 20% to 30% of patients will experience at least 1 tracheostomy-related adverse event. Within tracheostomy care and across wider health care environments, quality improvement (QI) programs have been shown to reduce patient harm and improve outcomes. Herein we report on a 5-year long, tracheostomy QI initiative aimed at improving patient experience and reducing the frequency and severity of adverse events. METHODS: A 5-year (ongoing) QI initiative led by the Cardiff and Vale University Health Board tracheostomy team, within a tertiary, 1000-bedded hospital in South Wales, United Kingdom. The QI initiative has focused on 3 main themes: (1) Education and training; (2) Clinical oversight and decision making; and (3) improved data collection. Data were collected from existing tracheostomy databases. RESULTS: Over the past 5 years, we have observed a sustained reduction in both the frequency and severity of adverse events, with less than 1 patient per 100 experiencing a moderate or severe adverse event. This has resulted in improvements in patient experience and a cost reduction of £GBP364,726 per annum. DISCUSSION: Our 5-year ongoing tracheostomy QI initiative has resulted in improved outcomes with increased achievement of tracheostomy weaning markers and sustained reductions in both the frequency and severity of adverse events. IMPLICATIONS FOR PRACTICE: A continuous focus on QI is associated with improved patient and service outcomes. These improvements can be spread and scaled to benefit more patients and organizations.

DOI: 10.1002/ohn.736 PMID: 38529665

NTSP Podcast Series

Aust Crit Care. 2024 Apr 15:S1036-7314(24)00051-1. doi: 10.1016/j.aucc.2024.02.009. Online ahead of print.

Communication in critical care tracheostomy patients dependent upon cuff inflation: A scoping review.

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OBJECTIVES: The aim of this study was to synthesise the evidence concerning communication in critically ill tracheostomy patients dependent on cuff inflation. The aim was to identify the psychological impact on patients awake and alert with tracheostomies but unable to speak; strategies utilised to enable communication and facilitators and barriers for the success of these strategies. REVIEW METHOD USED: This scoping review was conducted using the Joanna Briggs Institute framework and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews. DATA SOURCES: CINAHL, Embase, Medline, and Web of Science were searched from 1st January 2000 to 30th September 2023 and supplemented with hand searching of references from included studies. REVIEW METHODS: Studies were eligible if they addressed the psychological impact of voicelessness and/or the structure, process, and outcomes of augmentative and alternative communication (AAC) systems, in addition to facilitators and barriers to effectiveness. The population of interest included critically ill tracheostomy patients dependent on cuff inflation, their families, and healthcare workers. Screening and data extraction were undertaken by two reviewers independently. Data analysis involved descriptive statistics and content analysis. RESULTS: A total of 23 studies met the inclusion criteria: 11 were qualitative, nine were quantitative, and three were mixed-methods studies. Voicelessness elicited negative emotions, predominantly frustration. AAC systems, encompassing unaided and aided (low-tech and high-tech) methods, presented both advantages and drawbacks. High-tech strategies held promise for patients with physical limitations. Patients equally appreciated the support offered through unaided strategies, including eye contact and touch. Facilitating factors included speech therapy involvement and assessment. Patient-related challenges were the most frequent barriers. CONCLUSION: Facilitating meaningful communication for critically ill tracheostomy patients dependent on cuff inflation is of paramount psychological significance. Whilst AAC systems are practicable, they are not without limitations, implying the absence of a universally applicable solution. This underscores the importance of continuous evaluation, reinforced by a multidisciplinary team. REVIEW PROTOCOL REGISTERED: 27 July 2022. REVIEW REGISTRATION: Open Science Framework Registries: https://osf.io/kbrjn/.

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Tracheal Stenosis in Open Versus Percutaneous Tracheostomy.

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OBJECTIVE: This study aims to investigate if there is an increased risk of developing tracheal stenosis after tracheostomy with an open versus percutaneous tracheostomy. METHODS: The patient cohort included patients receiving open or percutaneous tracheostomies at Catholic Health Initiatives Midwest facilities from January 2017 to June 2023. The primary aim was to compare the differences in the risk of developing tracheal stenosis between open and percutaneous tracheostomy techniques. Between-technique differences in the risk of developing tracheal stenosis were assessed via a Cox proportional hazard model. To account for death precluding patients from developing tracheal stenosis, death was considered a competing risk. RESULTS: A total of 828 patients met inclusion criteria (61.7% open, 38.3% percutaneous); 2.5% (N = 21) developed tracheal stenosis. The median number of days to develop tracheal stenosis was 84 (interquartile range: 60 to 243, range: 6 to 739). Tracheal stenosis was more frequent in patients who received a percutaneous tracheostomy (percutaneous: 3.5% vs. open: 2.0%); however, the risk of developing tracheal stenosis was statistically similar between open and percutaneous techniques (HR: 2.05, 95% CI: 0.86-4.94, p = 0.108). CONCLUSIONS: This study demonstrates no significant difference in the development of tracheal stenosis when performing an open versus a percutaneous tracheostomy. Tracheal stenosis is a long-term complication of tracheostomy and should not influence the decision about the surgical technique used.

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